# PATENT COOPERATION TREATY

From the
INTERNATIONAL SEARCHING AUTHORITY

To:

see form PCT/ISA/220

# PCT

## WRITTEN OPINION OF THE INTERNATIONAL SEARCHING AUTHORITY
(PCT Rule 43*bis*.1)

Date of mailing
*(day/month/year)* see form PCT/ISA/210 (second sheet)

Applicant's or agent's file reference
see form PCT/ISA/220

**FOR FURTHER ACTION**
See paragraph 2 below

| International application No. | International filing date *(day/month/year)* | Priority date *(day/month/year)* |
|---|---|---|
| PCT/IB2005/000105 | 18.01.2005 | 19.01.2004 |

International Patent Classification (IPC) or both national classification and IPC
B21C47/30, B21C47/32

Applicant
DANIELI & C. OFFICINE MECCANICHE SPA

1. This opinion contains indications relating to the following items:

- ☒ Box No. I Basis of the opinion
- ☐ Box No. II Priority
- ☐ Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- ☐ Box No. IV Lack of unity of invention
- ☒ Box No. V Reasoned statement under Rule 43*bis*.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- ☐ Box No. VI Certain documents cited
- ☐ Box No. VII Certain defects in the international application
- ☐ Box No. VIII Certain observations on the international application

2. **FURTHER ACTION**

If a demand for international preliminary examination is made, this opinion will usually be considered to be a written opinion of the International Preliminary Examining Authority ("IPEA"). However, this does not apply where the applicant chooses an Authority other than this one to be the IPEA and the chosen IPEA has notifed the International Bureau under Rule 66.1*bis*(b) that written opinions of this International Searching Authority will not be so considered.

If this opinion is, as provided above, considered to be a written opinion of the IPEA, the applicant is invited to submit to the IPEA a written reply together, where appropriate, with amendments, before the expiration of three months from the date of mailing of Form PCT/ISA/220 or before the expiration of 22 months from the priority date, whichever expires later.

For further options, see Form PCT/ISA/220.

3. For further details, see notes to Form PCT/ISA/220.

Name and mailing address of the ISA:

European Patent Office - P.B. 5818 Patentlaan 2
NL-2280 HV Rijswijk - Pays Bas
Tel. +31 70 340 - 2040 Tx: 31 651 epo nl
Fax: +31 70 340 - 3016

Authorized Officer

Barrow, J

Telephone No. +31 70 340-2636

**Box No. I Basis of the opinion**

1. With regard to the **language**, this opinion has been established on the basis of the international application in the language in which it was filed, unless otherwise indicated under this item.

   ☐ This opinion has been established on the basis of a translation from the original language into the following language , which is the language of a translation furnished for the purposes of international search (under Rules 12.3 and 23.1(b)).

2. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application and necessary to the claimed invention, this opinion has been established on the basis of:

   a. type of material:

   ☐ a sequence listing

   ☐ table(s) related to the sequence listing

   b. format of material:

   ☐ in written format

   ☐ in computer readable form

   c. time of filing/furnishing:

   ☐ contained in the international application as filed.

   ☐ filed together with the international application in computer readable form.

   ☐ furnished subsequently to this Authority for the purposes of search.

3. ☐ In addition, in the case that more than one version or copy of a sequence listing and/or table relating thereto has been filed or furnished, the required statements that the information in the subsequent or additional copies is identical to that in the application as filed or does not go beyond the application as filed, as appropriate, were furnished.

4. Additional comments:

**Box No. V Reasoned statement under Rule 43*bis*.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement**

1. Statement

| | | | |
|---|---|---|---|
| Novelty (N) | Yes: | Claims | 1-16 |
| | No: | Claims | |
| Inventive step (IS) | Yes: | Claims | 1-16 |
| | No: | Claims | |
| Industrial applicability (IA) | Yes: | Claims | 1-16 |
| | No: | Claims | |

2. Citations and explanations

**see separate sheet**

**Re Item V**

**Reasoned statement with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement**

Reference is made to the following documents:

D1: US-A-3 592 399 (WOODROW) 13 July 1971 (1971-07-13)

D2: US-A-3 945 585 (MOSLENER JORN) 23 March 1976 (1976-03-23)

The document D1 is regarded as being the closest prior art to the subject-matter of claim 1, and shows (the references in parentheses applying to this document):

A device for coiling a windable long, metal product, comprising a mandrel (47) having a substantially circular transverse section and rotating around a horizontal, vertical or inclined axis, a containing element (58) to contain, said metal product, arranged in correspondence with said mandrel (47) and substantially orthogonal to said axis, and at least a guide and containing device (84) able to be driven between a first working position wherein it cooperates with said mandrel (47), and a second inactive position wherein it is arranged distant from said mandrel (47), wherein said containing element (58) comprises an annular channel (74) which is made in proximity with an outer surface of said mandrel (47), and in that said guide and containing device (84) comprises a groove (P) that is able to define an accompanying guide for said metal product along an outer circumference of said mandrel (47) towards said annular channel (74) when said guide and containing device (84) is in said first working position.

The subject-matter of claim 1 differs from this known device in that said annular channel (14) coaxial with the axis of rotation of said mandrel (12) and furthermore said metal product (10) is guided coaxially with said annular channel (14).

The subject-matter of claim 1 is therefore new (Article 33(2) PCT).

The problem to be solved by the present invention may be regarded as providing a device for coiling a metal product in which the metal product may be clamped to the mandrel with increased reliability and repeatability.

The solution to this problem proposed in claim 1 of the present application is considered as involving an inventive step (Article 33(3) PCT) for the following reasons:

Due to the mandrel (12) and annular channel (14) being coaxial, the metal product passes easily from mandrel (12) into channel (14); the leading end of metal product may be clamped at any position of the circumference of the mandrel as the product progresses axially along the mandrel to become "wedged" in channel (14).

In the prior art D1 the clamping will take place only at a single point where the tapering section between the mandrel (47) and clamping groove (74) matches the diameter of the metal product, hence it may take several revolutions of the mandrel before the leading end is incident with the correct point in the clamping groove (74) and becomes clamped.

A coaxial channel is known from D2, however this channel relies on centrifugal force to engage the leading wire end with sleeve (6), this does not provide a clamping engagement of the metal product with the mandrel and is dependent on a high rotary speed at the start of winding.

A person skilled in the art would not combine the teachings of D1 and D2 to arrive at the subject matter of the present invention.

Claims 2-12 are dependent on claim 1 and as such also meet the requirements of the PCT with respect to novelty and inventive step.

The document D1 is regarded as being the closest prior art to the subject-matter of claim 13, and shows (the references in parentheses applying to this document):

A method for coiling a long metal product, performed by means of a coiling device which comprises a mandrel (47) having a substantially circular transverse section and rotating around a horizontal, vertical or inclined axis, a containing element (58) to contain said metal product, arranged at one end of said mandrel (47) and substantially orthogonal to said axis, and at least a guide and containing device (84), able to be driven between a first working position wherein it cooperates with said mandrel (47), and a second inactive position wherein it is arranged distant from said mandrel (47), wherein it comprises the following steps: a first step wherein a leading end of said metal product is inserted into a groove (P) of said guide and containing device (84) arranged in said first working position to guide said metal product along an outer circumference of said mandrel (47); a second step wherein said metal product is guided by said groove (P) inside an annular channel (74) made on said containing element (58) in

proximity with an outer surface of said mandrel (47); a third step wherein an initial segment of said metal product is gripped and clamped in said annular channel (74); a fourth step wherein said metal product is wound onto said mandrel (47) for a pre-determined segment of length; a fifth step wherein said guide and containing device (84) is taken from said first working position to said second inactive position; and a sixth step wherein said metal product is wound for the remainder of its length.

The subject-matter of claim 1 differs from this known method in that said metal product (10) is guided coaxially with said axis of rotation of said mandrel (12) and furthermore in that an initial segment of said metal product (10) is gripped and clamped in said annular channel (14) by means of friction forces generated between said metal product (10) and the walls of said annular channel.

The subject-matter of claim 13 is therefore new (Article 33(2) PCT).

The problem to be solved by the present invention may be regarded as providing a method for coiling a metal product in which the metal product may be clamped to the mandrel with increased reliability and repeatability.

The solution to this problem proposed in claim 13 of the present application is considered as involving an inventive step (Article 33(3) PCT) for the following reasons:

Since the annular channel (14) and mandrel (12) are coaxial, as the metal product (10) is wound about and moves axially along the mandrel (12) it will pass easily into channel (14) and become frictionally engaged with the walls of the annular channel (14).

In the prior art of D1 the leading end of the metal product will only become clamped when it coincides with the point where dimensions of the tapered clamping groove match those of the material being wound.

Claim 14-16 are dependent on claim 13 and as such also meet the requirements of the PCT with respect to novelty and inventive step.